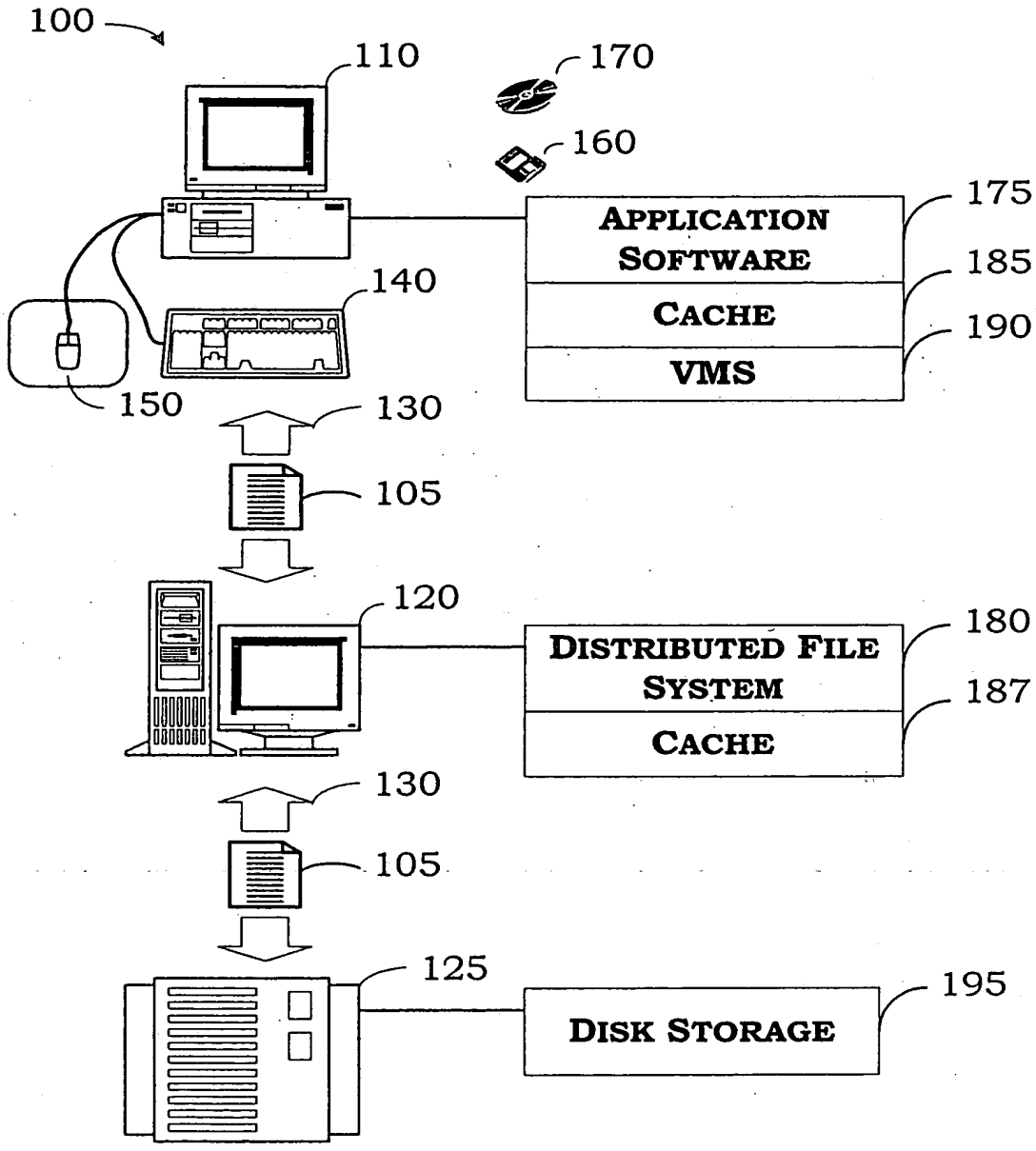

100
110
170
160
175
APPLICATION SOFTWARE
185
CACHE
190
VMS
140
150
130
105
120
180
DISTRIBUTED FILE SYSTEM
187
CACHE
130
105
125
195
DISK STORAGE

FIG 1

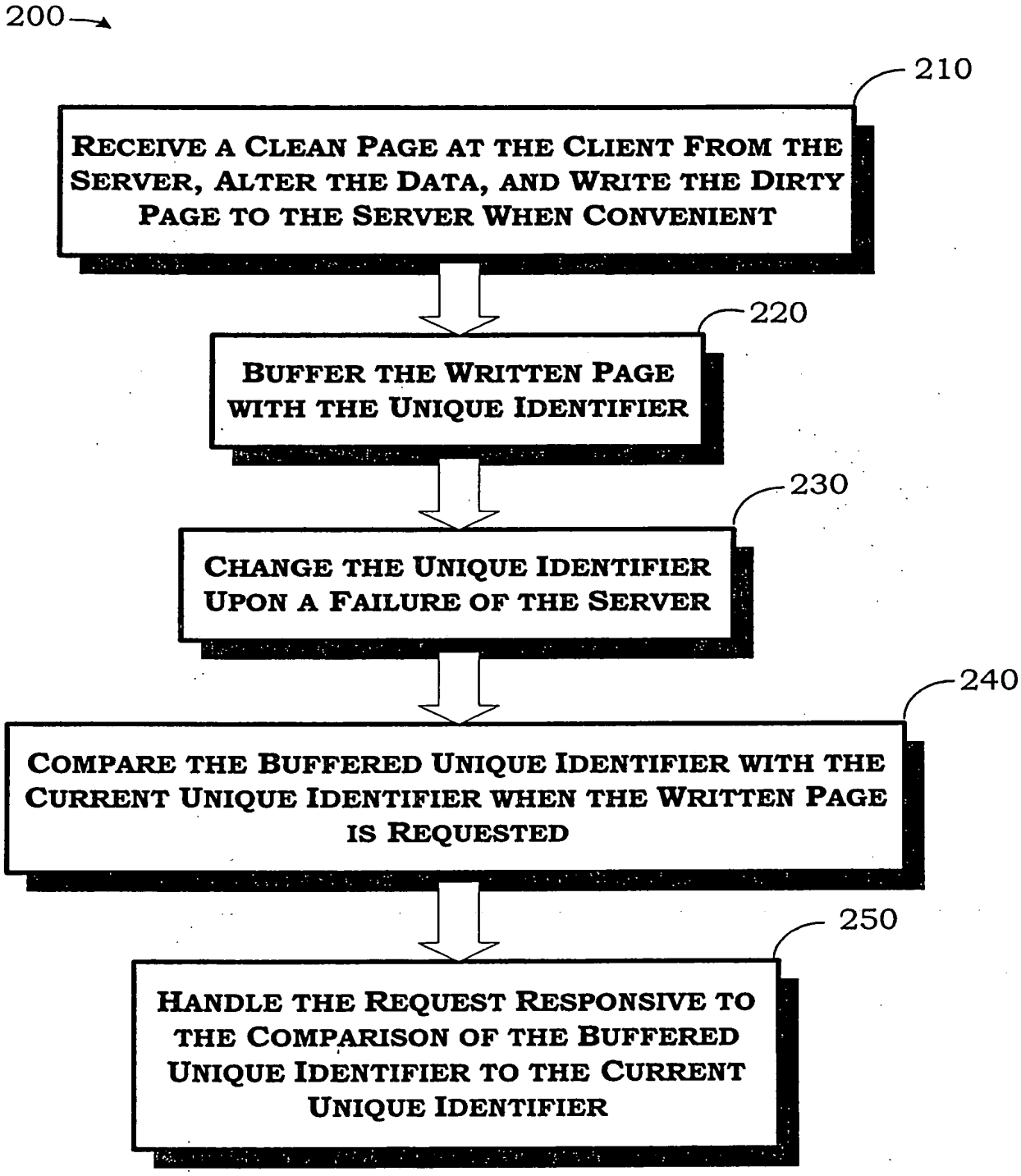

200
210
RECEIVE A CLEAN PAGE AT THE CLIENT FROM THE SERVER, ALTER THE DATA, AND WRITE THE DIRTY PAGE TO THE SERVER WHEN CONVENIENT
220
BUFFER THE WRITTEN PAGE WITH THE UNIQUE IDENTIFIER
230
CHANGE THE UNIQUE IDENTIFIER UPON A FAILURE OF THE SERVER
240
COMPARE THE BUFFERED UNIQUE IDENTIFIER WITH THE CURRENT UNIQUE IDENTIFIER WHEN THE WRITTEN PAGE IS REQUESTED
250
HANDLE THE REQUEST RESPONSIVE TO THE COMPARISON OF THE BUFFERED UNIQUE IDENTIFIER TO THE CURRENT UNIQUE IDENTIFIER

FIG 2

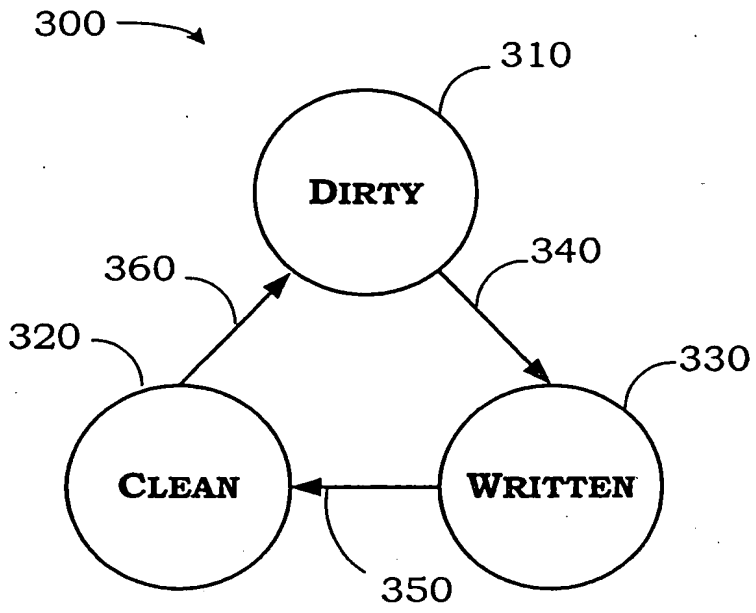

300
310
DIRTY
340
360
320
330
CLEAN
WRITTEN
350

FIG. 3

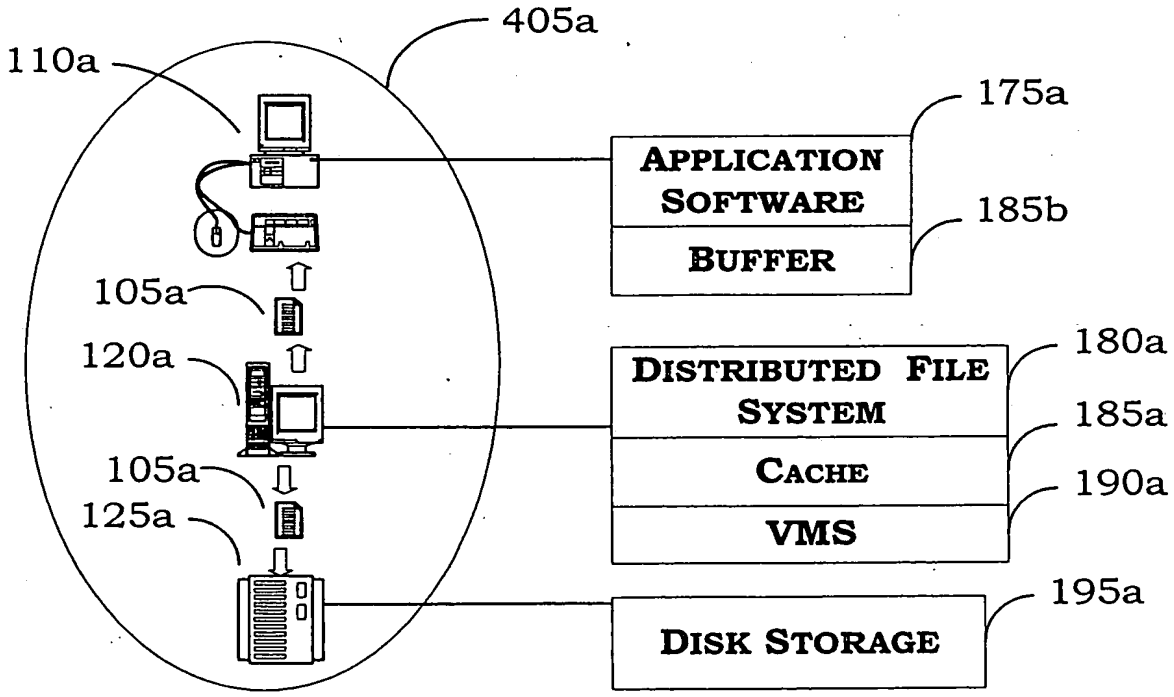

405a
110a
175a
APPLICATION SOFTWARE
185b
BUFFER
105a
120a
180a
DISTRIBUTED FILE SYSTEM
185a
105a
CACHE
190a
125a
VMS
195a
DISK STORAGE

FIG 6

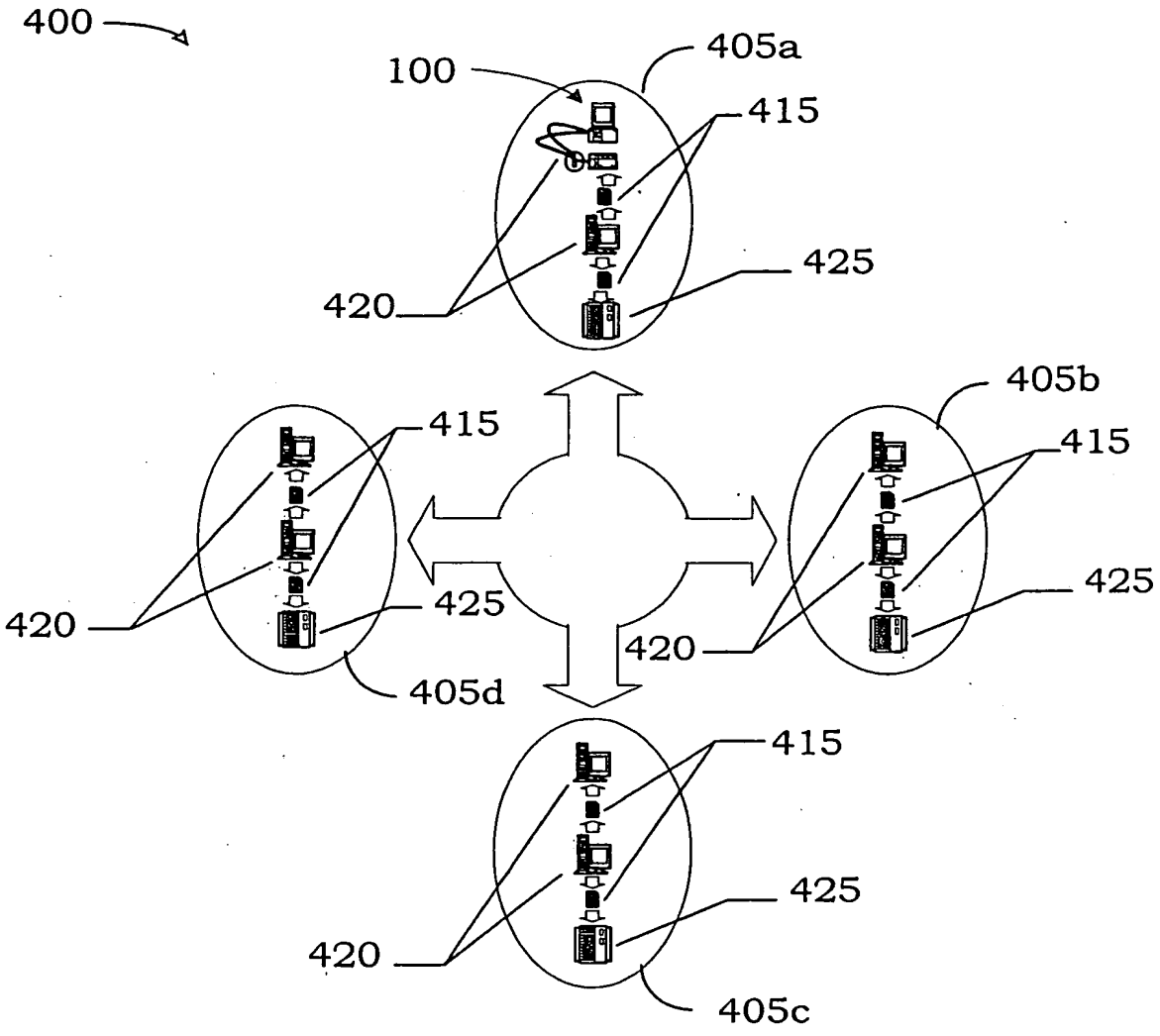

400
100
405a
415
425
420
405b
415
425
420
415
425
420
405d
415
425
420
405c

FIG. 4

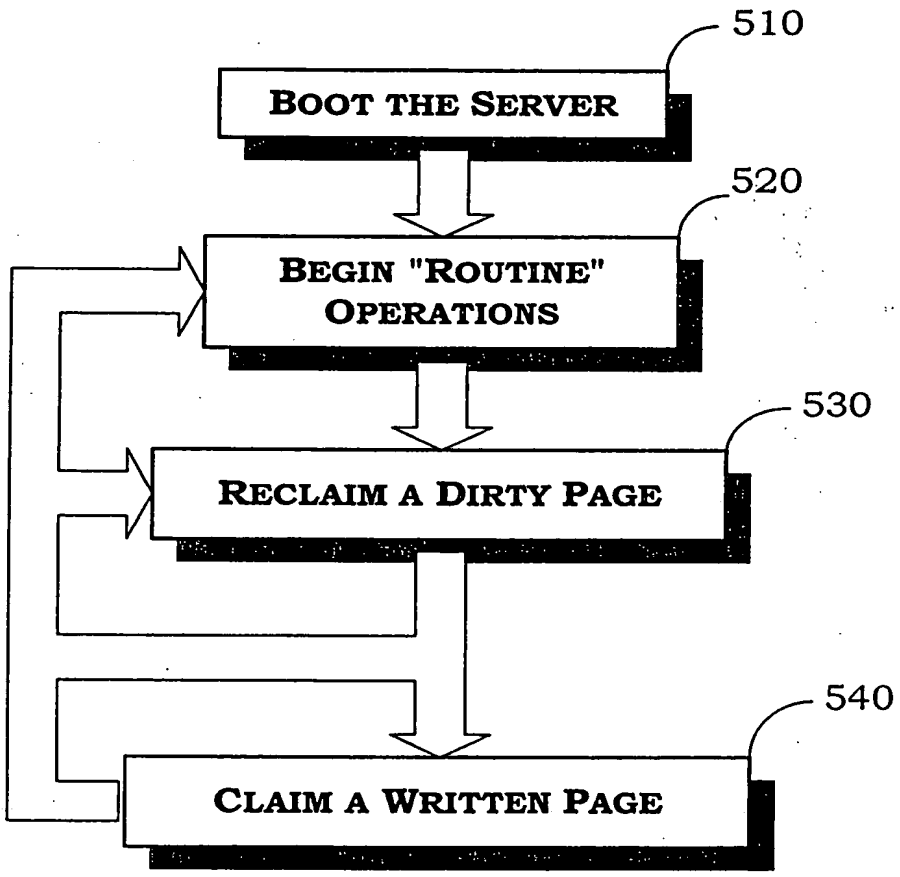

500
510
BOOT THE SERVER
520
BEGIN "ROUTINE" OPERATIONS
530
RECLAIM A DIRTY PAGE
540
CLAIM A WRITTEN PAGE

FIG. 5

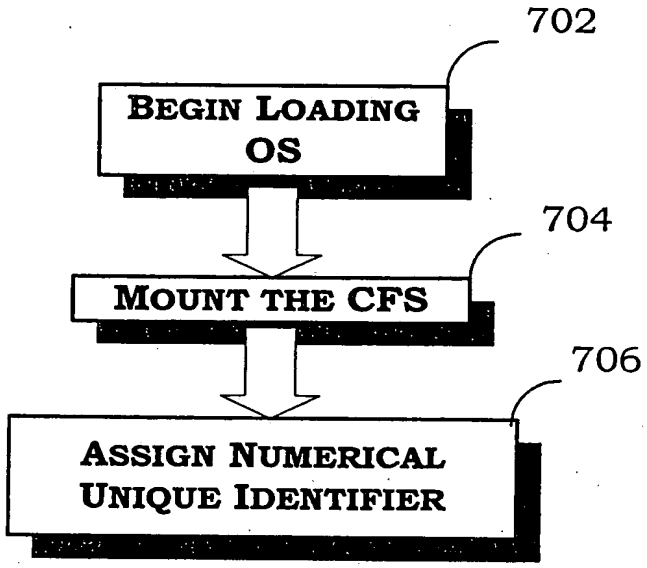

702
BEGIN LOADING OS
704
MOUNT THE CFS
706
ASSIGN NUMERICAL UNIQUE IDENTIFIER

FIG. 7A

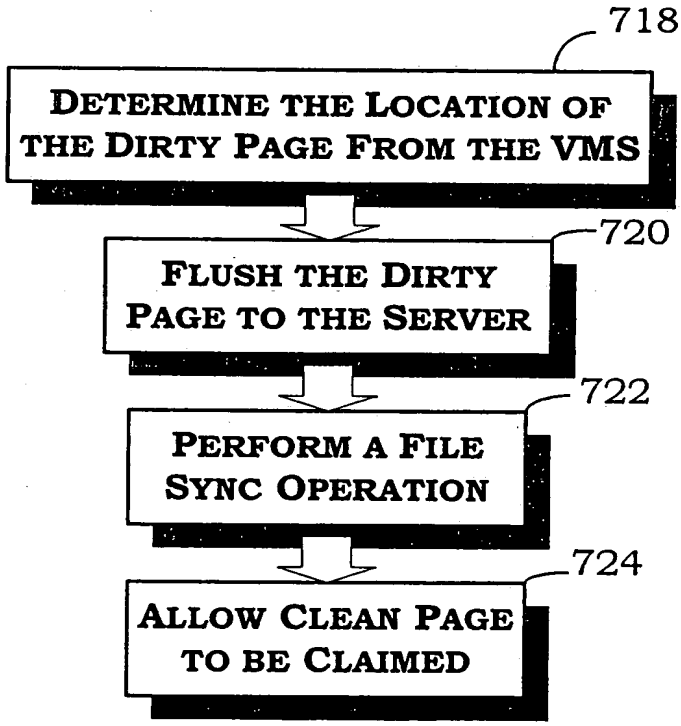
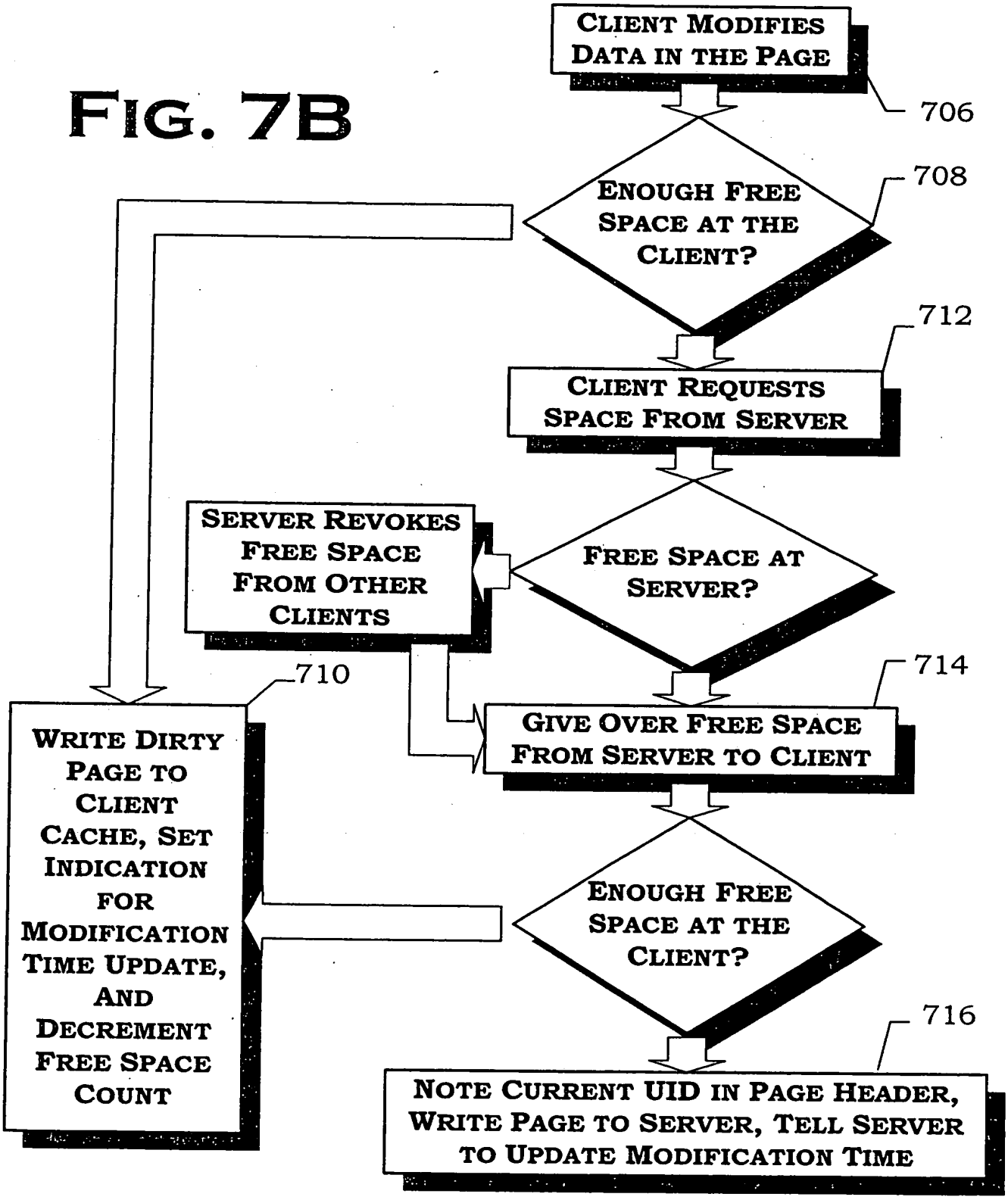

718
DETERMINE THE LOCATION OF THE DIRTY PAGE FROM THE VMS
720
FLUSH THE DIRTY PAGE TO THE SERVER
722
PERFORM A FILE SYNC OPERATION
724
ALLOW CLEAN PAGE TO BE CLAIMED

FIG 7C

FIG. 7B


CLIENT MODIFIES DATA IN THE PAGE
706
ENOUGH FREE SPACE AT THE CLIENT?
708
CLIENT REQUESTS SPACE FROM SERVER
712
FREE SPACE AT SERVER?
SERVER REVOKES FREE SPACE FROM OTHER CLIENTS
GIVE OVER FREE SPACE FROM SERVER TO CLIENT
714
ENOUGH FREE SPACE AT THE CLIENT?
710
WRITE DIRTY PAGE TO CLIENT CACHE, SET INDICATION FOR MODIFICATION TIME UPDATE, AND DECREMENT FREE SPACE COUNT
716
NOTE CURRENT UID IN PAGE HEADER, WRITE PAGE TO SERVER, TELL SERVER TO UPDATE MODIFICATION TIME

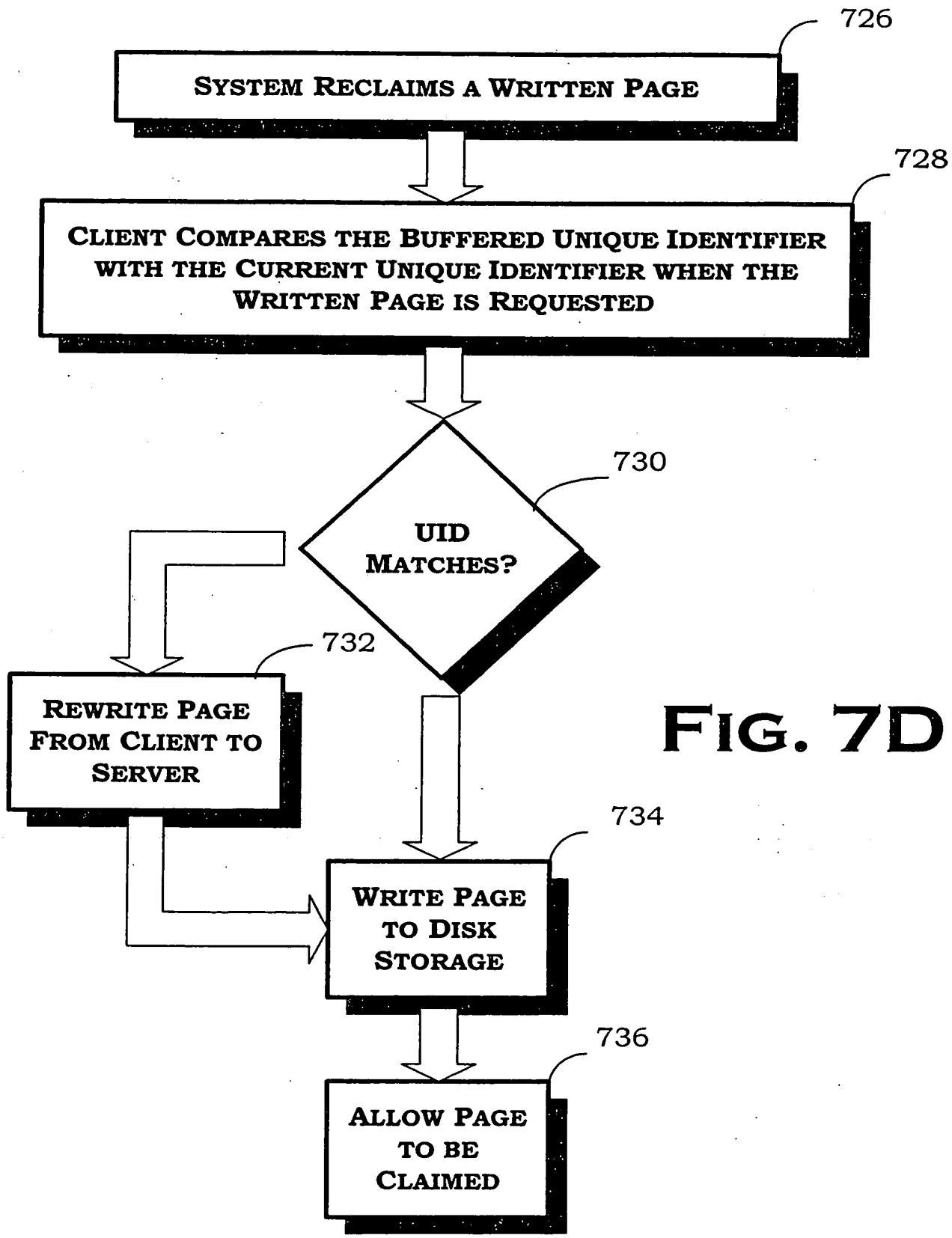

726
SYSTEM RECLAIMS A WRITTEN PAGE
728
CLIENT COMPARES THE BUFFERED UNIQUE IDENTIFIER WITH THE CURRENT UNIQUE IDENTIFIER WHEN THE WRITTEN PAGE IS REQUESTED
730
UID MATCHES?
732
REWRITE PAGE FROM CLIENT TO SERVER
734
WRITE PAGE TO DISK STORAGE
736
ALLOW PAGE TO BE CLAIMED

FIG. 7D